DOCUMENT RESUME

ED 124 978 CS 202 808

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TITLE Individual Political Participation: The Effects of Social Structure and Communication Behavior.
PUB DATE 76
NOTE 39p.; Paper presented at the Annual Meeting of the Association for Education in Journalism (College Park, Maryland, August 1976)

EDRS PRICE MF-$0.83 HC-$2.06 Plus Postage.
DESCRIPTORS *Citizen Participation; *Communication (Thought Transfer); *Mass Media; Media Research; Political Attitudes; *Political Influences; Public Affairs Education; *Sex Differences; *Social Structure; State Surveys

ABSTRACT

In this paper, the possibility of a bidirectional relationship between mass media use and political participation and a possible interaction of sex with other model variables are examined. A Two-Stage Least Squares analysis explores the mutual causation of mass media use and political participation, and separate analyses for male and female respondents explore the sex interactions. Data are from a 1971 survey of North Carolina. Mass media use is shown to have an effect on political participation in both the male and female subsamples. Political activity has a positive return effect on media use in the female subsample only. Results indicate that models which specify media use as a unidirectional cause of participation behavior are probably incorrect. Since empirical observations can lead to accurate inferences about the nature of a system only when the causal model is correctly specified, this analysis suggests wider use of techniques which allow the investigation of nonrecursive relationships. (Author/JM)

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INDIVIDUAL POLITICAL PARTICIPATION:

THE EFFECTS OF SOCIAL STRUCTURE AND COMMUNICATION BEHAVIOR

by

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Presented before the Theory and Methodology Division, Association for Education in Journalism, College Park, Maryland, August 1, 1976. The author wishes to thank L. Edward Mullins and David R. Heise for helpful comments on an earlier draft of this paper.

CS 202 808

In spite of plentiful information on the correlates of political participation[1] and several major attempts to build a verbal theory of individual political behavior (see Lane 1959; Lipset 1960; Campbell et al. 1964), researchers have only recently begun to quantify these theories. Path analysis has been used in most of these attempts (notably Nie, Powell and Prewitt 1969 and Burstein 1972). Although path analysis is a valuable tool in quantifying and testing theories, it requires several restrictive assumptions.[2] Since empirical observations can lead to inferences about the nature of a system only in the context of these theoretical assumptions, specification of the hypothesized causal model determines the appropriate analyses and thus the accuracy of the parameter estimates.

In this paper the theoretical models presented by Nie, Powell and Prewitt (1969) and by Burstein (1972) are briefly reviewed to assess the adequacy of a recursive structural equation model for describing the causal processes that influence political participation. Re-specification of some relationships is suggested and the parameters are then estimated using non-recursive model specifications. Specifically, the possibility of a bidirectional relationship between mass media use and political participation and a possible interaction of sex with other model variables are examined. A Two-Stage Least Squares analysis is used to explore the mutual causation of mass media use and political participation. Separate analyses for male and female respondents are used to explore the sex interactions.

The data used to estimate the model parameters are from a 1971 statewide survey of North Carolina, providing a more recent but more geographically limited examination of the hypothesized causal relationships than the five nation Civic Culture[3] survey used by both Nie et al. (1969) and Burstein (1972). Despite the measurement problems inherent in secondary analyses, this study may help to advance efforts to understand the political participation/mass media use relationship through the examination of bidirectional causation.

Path Models of Political Participation

Nie, Powell and Prewitt (1969) and Burstein (1972) both draw upon the classic verbal theories of political behavior (notably Lane 1959; Lipset 1960; Campbell et al. 1964; Almond and Verba 1965) to develop their causal models. But they take markedly different approaches to the problem. Nie et al. attempt to fill in the causal links between macro-socio-economic processes and citizen participation by examining socio-psychological variables (see Figure 1) such as resources, attitudes and needs of individuals.

The five variables considered by Nie et al. (sense of citizen duty, information about politics, perceived stake in political outcomes, sense of political efficacy, and attentiveness to political communications in the mass media) do mediate some of the effects of the social variables on political participation. But organizational involvements (labor force participation, numbers of club memberships, etc.) continue to show a strong independent effect on participation even when the socio-psychological variables are included in the model. Socio-economic status also has an independent effect on participation in the U.S. sample (although not in the countries with active labor parties).

Burstein focuses instead on the social processes which determine the earlier study's exogenous variables (see Figure 2). He attempts to examine the "process by which an individual comes to occupy a given social position in the first place and the consequences of his position for his political participation" (Burstein 1972:1096).

These social indicators will be related to political participation, Burstein argues, because they measure the extent to which individuals are integrated into social networks and are ties into larger society. The dimension of volunatriness and the time order are the rationales used to place the social structural variables in a model describing the causal determinants of political participation. Ascribed characteristics (e.g. race, age) are exogenous since they are determined at birth. Social roles

and voluntary behaviors (information flows) follow in that order (see Figure 2).

Burstein finds empirical confirmation of most of his ideas and explains the same amount of variance (41 percent) in the political participation scale as Nie et al. (who use the same data). Variables which are closer to participation on the "voluntariness" dimension are generally more highly correlated with the dependent measure than those variables which are further away. In the path analysis, the intervening variables do mediate most of the effects of the less voluntary factors on political participation. The most significant deviation from the hypothesized pattern is the persistent independent effect of sex on the endogenous variables. Since sex is an ascribed characteristic, Burstein's theoretical formulation predicts that its effect should be mediated by social roles and information flows. Burstein suggests that "marriage has the very strong and contradictory effects of tying the woman very tightly to one person, but greatly reducing the number and types of other ties (into the labor force and many organizations)" (1972:1101). The major discontinuity in social ties based on the ascribed characteristic of sex is Burstein's explanation for the independent effect of sex on information flows and political participation.

Proposed Respecification of the Model

A review of the Nie et al. (1969) and Burstein (1972) articles suggests several avenues for further progress toward an empirical model of the determinants of individual political participation.

Mass Media Use and Political Participation. Both Nie et al. and Burstein assume that the relationship between mass media use and political participation is recursive, with media use leading to increased political participation and no effect of participation on media use. The assumption is that contact with political information and societal institutions through the mass media produces an inclination to participate actively in political life (Burstein 1972:1096).

Although this reasoning is quite common in both the modernization and poli-

tical participation literature (see Lerner 1954; Rogers 1965; Milbrath 1965), an argument can be made for a return effect of political participation on mass media use. Media consumption may be viewed as purposive behavior (Katz, Blumler and Gurevitch 1974), in which case the audience becomes an active component in the mass communication process. The "uses and gratifications" orientation within communication research emphasizes that selectivity in media consumption is guided by many factors, including psychological predispositions, social processes and cultural factors. In particular, social situations may determine use of the media in at least three ways (Katz, Blumler and Gurevitch 1973):

(1) Social situations create awareness of problems that demand attention and information which may be gained through the media.

(2) Social situations give rise to values; consumption of the media offers an opportunity for affirmation and reinforcement.

(3) Social situations give rise to expectations about the media based on experience; since the media are shown to have social utility, they are used for conversational currency. Attention to specific media messages may aid in maintaining membership in social groups and in gratifying desires for social prestige.

Much of the empirical research in the "uses and gratifications" tradition has dealt with political topics. Blumler and McQuail (1969) studied British election broadcasts and found that roughly three-eights of the audience was engaged in "purposive" viewing. Chaffee and McLeod (1972) found that information-seeking (reading political pamphlets) was a function of the social utility of the information. The relationship between an individual's political interest and that of his friends and the frequency of political discussions interacted with the level of information-seeking.

McCombs and Mullins (1973) suggest the full complexity of the problem. They find that general media exposure led to increased political interest among college

students. This interest seems to add a distinct focus to their use of mass communications. As political interest develops, diffuse information aquisition becomes focused information-seeking, suggesting that there may be two distinct orientations to media content: information orientation (generalized use of media for a variety of facts and other purposes) and integration orientation (an integrated structure which leads to use of the media for evaluation and background).

A respecified causal model of political participation which reflects this complexity must include the following features:

(1) the determination of media use by demographic and life style variables (Kline 1971);

(2) the influence of mass media use upon political participation (Nie et al. 1969, Burstein 1972);

(3) the influence of political participation upon the use of mass media for gaining political information (Katz, Gurevitch and Haas 1973; Katz, Blumler and Gurevitch 1973).

Interaction of Sex with Other Model Variables. Burstein (1972:1097) suggests that differences in social ties based on the ascribed characteristic of sex may be an indication that the process leading to political participation might be quite different for the two sexes. If this is the case, sex would be expected to interact with many of the model variables, violating the additivity assumption necessary for path analysis.

Lynn and Flora (1974) comment on the greater significance of familial roles and life cycle position for the woman. The presence of children in the home leads to sudden discontinuities in social ties for the woman as it changes the relative balance of costs and rewards incurred by employment, other social participation, information-seeking, and political involvement.

The effects of marriage and parenthood are expected to be greater for women than for men since family roles have been generally considered to be the married females' most important responsibility (Haavio-Mannila 1967). For men, education, work

and political and organizational activities are seen as important expectations. In fact, when asked the "relative importance of selected activities for men and women," Haavio-Mannila's respondents cited marital fidelity and religious attendance most frequently for women and education and career most frequently for men. The largest difference between the sexes was the importance of "being interested in politics" and of "speaking up at meetings" (Haavio-Mannila 1967).

Finally, Lynn and Flora (1974) suggest that the media use/political participation relationship may be different for females and males. Although their female respondents were exposed to political information in the media, it did not have the stimulating effect on political activity hypothesized in earlier discussions.

> ...Since they (the female respondents) felt they did not have the time to get involved, this preoccupation with the media served as a means of fulfilling their civic duty. Although lack of time may make this displacement unnecessary it may also serve as a "narcotizing dysfunction" with respect to activating political activity. Some respondents were sustituting the passive intake of information for more demanding and active political activities... (Lynn and Flora 1974:242).

Perhaps without the extra-familial contacts generally available to men, media use supplies information and perhaps even interest, but no action.

Because of possible interactions between sex and other model variables, a more complete analysis of the causal processes which determine individual political participation can be accomplished by:

(1) conducting separate analyses for male and female respondents to examine whether different causal processes are operating in each subsample (i.e., to examine the sex interactions);

(2) including familial as well as non-familial social roles in the model, since the former are expected to be important determinants for women, if not for men.

The Structural Model

The proposed model is presented in Figure 3. Age, race, religion and

and parent's social class are ascribed attributes. The first two are biosocial variables--characteristics over which the individual has no control but which affect the way he is likely to be treated by others. (Age, of course, represents a number of inseperable factors: actual aging, life course position, and cohort membership.) The second two variables locate the individual within ethnic subgroups. These ethnic identifications also influence others' behavior toward the individual and often determine his chance to occupy social roles.

As in Burstein's article, socio-economic status is used as a rough approximation of formal role occupancy. Measures of status are a shorthand way of locating a person in society; class membership is seen as weighing the probabilities toward a series of life experiences, producing certain sorts of social links to the political system (see discussion in Burstein 1972:1094; also Lane 1959, Verba and Nie 1972).

Marital status and familial responsibilities are also included in the model as indicators of formal role occupancy. Although neither Nie et al. or Burstein include familial roles in their models of political participation, these factors appear to be important determinants of women's social networks (see above discussion).

The network variables (voluntary behaviors) are also rough approximations of the concept explicated by Burstein. Labor force participation and active church membership are included in the model as measures of social participation. Thus the variables do not assess participation in networks, but whther a respondent is involved in particular networks at all. Attention to mass media communication channels is also included under this general category of network variables.

Political participation is the dependent variable in the causal model.

The variables representing social participation and network position are all expected to affect political participation. Those in the labor force are exposed to a wider range of contacts than those who stay at home. Active members of church organizations have wider ties than nonmembers. Individuals who attend to the media gain both shared societal values and useful information, both of which are necessary

for effective participation within the political system.

The model also predicts that the effects of the ascribed characteristics on political participation will be mediated by the social roles, social network participation, and communications behavior. Similarly, most of the effects of social roles are mediated by social network participation and by communication behavior.

Finally, a return effect of political participation on media use is hypothesized.

Estimating Path Parameters

In order to estimate the separate components of the non-recursive relationship between media use and political participation, Two-Stage Least Squares estimation must be employed. This technique requires the use of "instrumental variables" which meet the following theoretical requirements:

> A variable X is an instrument for Y in the non-recursive relationship Y⟶Z if (1) X does not have a direct effect on Z; (2) X does effect Y either directly or through an intervening variable that has no direct effect on Z; (3) neither Y nor Z has a direct or indirect effect on X; and (4) no unspecified factor jointly affects X and Z, and, in general, X is uncoordinated with the disturbances of Z.
>
> The variable X may be merely correlated with Y and still be an instrument for the Y⟶Z relationship providing it fulfills requirements (1), (2), and (3). In particular, the X-Y relationship need not be fully recursive because X may be correlated with the disturbances of Y (Heise 1975:160-1).

To analyze the loop involving political participation and mass media use, instrumental variables must be found for both the media use⟶political participation effect and for the political participation⟶media use effect (see Figure 4).

First, let us consider the variables which might affect mass media use but not have a direct effect on political participation. Such variables are likely to be factors which determine media availability, regardless of the respondents' orientation toward the media and the information it contains. Two such variables are the presence/absence of a local newspaper in the area where the respondent lives and the availability of a good television signal. Another general indication of the media

available in the respondents' immediate environment is the proximity of an urban area.

These ecological variables seem to meet the requirements for instrumental variables. They should affect media use directly, but there is no reason why they should affect political participation except through the media use variable. Although media use may affect media availability through the creation of advertising markets, etc., the effect of any individual's media use would be infintesimally small, allowing it to be ignored in this type of analysis. Similarly, the disturbances of media availability and political participation should not be correlated. Media availability will be determined primarily by market conditions. Such market conditions will be unlikely to affect any individual's political participation.

The best potential instruments for the political participation→media use relationship are provided by official obstacles to participation over which the individual has little or no control. For example, residence requirements alone may disenfranchise as much as 5 to 10 percent of the eligible electorate (McCloskey 1968). Highly mobile individuals will be less likely to vote because of such restrictions and because of inadequate provision for absentee ballots. Frequent movers will also have a more difficult time participating in organized party politics, since they will be less likely to remain in one area long enough to become acquainted with the local political machines. Finally, newcomers to the community will be less likely to feel comfortable in attempting to personally influence other members of the community whom they do not already know on a social basis.

If the arguments outlined above are valid, instrumental variables are available for both the media use→political participation effect and for the political participation→media use effect. Two-Stage Least Squares analysis may therefore be used to estimate these two components of the non-recursive relationship.

The Data Set

The data set used to estimate the model parameters is the 1971 Southeastern

Regional Survey III ("A Survey of North Carolina") directed by Angell G. Beza. The survey was conducted by the Institute for Research in the Social Sciences of the University of North Carolina at Chapel Hill with funds provided through a National Science Foundation Development grant.

The population for the survey was the adult non-institutionalized residents of North Carolina. A self-weighting random sample of households stratified by geographical region (mountains, piedmont, coastal plain) and by size of place (urbanized areas, other urban (2500 to 50000 population), rural areas) was drawn. Interviews averaging one and one-half hours in length were completed with 79 percent of the original sample, yielding an N of 1127.

Questions were chosen from the survey to match as closely as possible the theoretical classification suggested by Burstein (1972). Two notable gaps in the measurement are the absence of items which assess participation in voluntary organizations and the absence of interpersonal communication measures.

Forty-five respondents who had missing data on one or more of the six items comprising the political participation scale (see Table 1) were dropped from the sample (final N=1082). For all other items used in constructing the model variables, missing cases were assigned the median value if the item was interval or ordinal and were assigned the modal value if the item was a nominal dichotomy.

Measurement

The measurement of the variables and the coding procedures employed are described below. Following each variable name is an abbreviated label that will be used in the tables to follow.

Political Participation (POLIPART). Political participation may be defined as activities by private citizens that are aimed at influencing the selection of government officials and the actions of those officials (Verba and Nie 1972). A scale measuring this participation was obtained by factoring the self-reported frequency of

six political activities (see Table 1). Each of the items was coded 1 to 4, with 1 indicating that the respondent had never engaged in the activity and 4 indicating that he almost always did.

Both Burstein (1972) and Nie et al. (1969) exclude voting from their political participation scales, noting that it is only weakly related to other sorts of political activity and appears to have a different relationship to other variables in their models. Other writers, however, argue that participation is a unidimensional concept; participatory acts vary in terms of their difficulty, but can otherwise be thought of as interchangable (see Berelson et al. 1954; Lane 1959; Milbrath 1965). Here the amount of participation engaged in by the citizen, not the type of act in which he engages, is the relevant measure of involvement in the democratic process.

In the North Carolina data, principal component analysis was used to explore the dimensionality of the set of political behaviors. The solution indicated one major factor, accounting for 39.6 percent of the variance in the items. This first component accounted for more than twice as much of the variance as the next component. After this major discontinuity, the variance explained drops only slightly as each additional component is added (see Table 1).

Although one factor is indicated, it was decided to follow the more conservative procedure and to include the component after the discontinuity in the factor analysis. Principal factor analysis with two factors was used to assess the relationships of the individual political behavior items to the inferred common factor of political participation. Estimates of the common variance were placed in the diagonal of the correlation matrix and then improved through an iterative process (SPSS Manual 1971). After the factor loadings of the variables on the two factors were obtained, a Quartimax rotation was used to reach a more interpretable solution.[4]

In order to determine the combination of items which would form the "best" scale, reliability and validity coefficients were computed for several weighting schemes. The scale chosen for use in the analysis included all six political behavior

items added with the score on each item weighted by the quantity $(f_i/1-f_i^2)$ where f_i is the rotated factor loading. This scale had a reliability of Ω=0.7547, a validity of ρ=0.8642, and an invalidity of ψ^2=0.0078. (See Appendix A for a discussion of omega, rho and psi-squared.)

Mass Media Use for News and Other Information (MEDIAUSE). The media use scale was developed from questions which asked respondents about their recent media behavior. They were asked if they had watched television news or read a newspaper "yesterday or today" and whther they had been to the library "in the last year." Obviously these questions introduce some measurement error by assuming that recent behavior is indicative of typical media use. This assumption may be particularly questionable in the case of respondents who were interviewed during the weekend or on Monday morning. Also, respondents living in an area with only weekly newspapers may have given responses which are not truly indicative of their media behavior depending on whether they were interviewed just after the paper came out or before they had received their weekly copy.

In spite of these problems, these items are useful as rough indicators of media use for news and information. Four items were combined to form a media use scale. Although factor analysis is not a particularly useful procedure with so few items, the scaling procedure described above was repeated with the media use items to obtain the optimum weighting for combining the individual items into one scale (see Table 2). The resulting scale had a reliability of Ω=0.6818, a validity of ρ=0.9947, and an invalidity of ψ^2=0.0028. Compared to the political participation scale, the reliability is quite low. This, of course, will tend to attenuate correlations of the other variables with media use and lead to underestimation of the path parameters. This will no doubt be a problem with all of the variables where there were only a few applicable items in the survey.

Labor Force Participation (EMPLOY). Labor force participation includes three categories: employed full-time, employed part-time, and not working. Numerical values of 2 to 0 were assigned to these categories.

Participation in Church Activities (ATTEND). The item used to assess participation in church activities also assumed that recent behavior is indicative of usual patterns of participation. Respondents were asked if they had attended any church activities in the last week. A "yes" reply is coded 2, a "no" reply is coded 1.

Marital Status and Familial Responsibilities (FAMILY). Several items were combined into one measure of the family responsibilities which the respondent was likely to have. A question on marital status was used to determine which of the respondents were ever married; those who were not were assigned a value of 0.

For those who were married but were living in a household with no children (under 18 years of age), a value of 1 was assigned. If children were present, but none were under the age of six, a value of 2 was assigned. Finally, if there was at least one child in the household under the age of six, a value of 3 was assigned. The distinction based on the age of the children is considered to be a rough indication of familial responsibility (especially for women).

Socio-Economic Status (SES). Three indicators were chosen to represent the respondents' socio-economic class: head of household's educational attainment, head of household's occupational prestige, and the respondent's subjective social class identification.

Educational attainment was measured as years of formal schooling. Occupational prestige was determined by assigning Hodge-Siegal-Rossi prestige scores[5] to the 1970 Census occupational codes for the heads of households. Subjective social class identification was the response to a question which asked which class ("middle class" or "working class") the respondent thought of himself as being a member.

Parents' Socio-Economic Status (PARSES). Father's occupational prestige and the subjective social class of the family of origin were combined to measure the parents' socio-economic status.

Religious Affiliation (RELIGION). Members of the majority protestant religious groups (N=1002) were assigned a value of 1. All members of minority religions[6] were assigned a value of 2.

Age of Respondent (AGE). This variable was coded as the chronological age of the respondent at his last birthday.

Race of the Respondent (RACE). Members of the majority white population (N=868) were assigned a value of 1. All members of minority racial groups[7] were assigned a value of 2.

The Instrumental Variables

Physical Mobility of the Respondent (MOBILITY). Six items were chosen from the survey to indicate physical mobility: number of moves, longest distance ever traveled, how long the respondent had lived at his present residence, whether he would choose to live at his present location if given the choice of anywhere to live, whether he considered his present residence his hometwon, and whther he had ever lived outside the South. The items were factor analyzed; one factor was indicated (see Table 3). Weights were applied to the scores on each item and the items were summed, yielding a scale with a reliability of Ω=0.5941, a validity of ρ=0.7307, and an invalidity of ψ^2= 0.0601.

Availability of a Good Television Signal (TVSIGN). The availability of a television signal was roughly determined by coding the number of commercial television stations which reached the respondent's county with a Grade A[8] signal according to FCC coverage contour maps (Television Factbook 1970-1971).

Availability of a Local Newspaper (NWSPR). This variable was also coded according to the respondent's county of residence. The respondent was assigned the value of 0 if he lived in a county where no daily newspaper was published, a 1 if only an evening paper, a 2 if only a morning paper, a 3 if two evening papers, a 4 if a morning and an evening paper, a 5 if two morning papers, and a 6 if two morning and one evening or one morning and two evening papers (Editor and Publisher Yearbook 1971).

Per Cent of Television Houselholds in the County of Residence (TVHH). A television household is a household having one or more television sets. Estimates for

each county are based on a U.S. bureau pf the Census surveys (Television Factbook 1970-1971). The variable's value for each respondent is determined by the county in which he resides.

Proximity to an Urban Center (URBAN). This variable is coded with a value of 1 if the respondent lives in a rural area, 2 if the respondent lives in an area near an urban place with 2500 to 50000 population, and 3 if the respondent lives in an urban center with larger than 50000 population.

The Two-Stage Least Squares Analysis: Results and Discussion

It is necessary to employ Two-Stage Least Squares analysis to separate the components of the two-way non-recursive relationship between political participation and mass media use. (See Appendix B for a brief discussion of the logic of this type of analysis.) To estimate the parameters of such a model, instrumental variables must be employed (see above discussion and Figure 4).

In addition to the theoretical requirements that instruments must meet, they must also have adequate correlation with the non-recursive source for which they are instruments. In the female subsample, all of the correlations are quite adequate. The correlation of political participation with MOBILITY is -0.26 and the correlation of mass media use with TVHH, TVSIGN, NWSPR and URBAN are 0.18, 0.10, 0.16 and 0.13 respectively. (All of these are significant at $p < .05$.)

In the male subsample, the instruments for mass media use meet the requirements with correlations of 0.24, 0.15, 0.24, and 0.29. But the political participation--MOBILITY correlation is only-0.08. Although this is significant at the .05 level, it is quite weak to be the sole instrument for this relationship. The analysis may proceed, but a better prediction would have been obtained if more instruments had been available.

The results of the Two-Stage Least Squares analysis applied to the model in Figures 3 and 4 are presented in Tables 4 and 5. In both the male and female subsamples

media use is shown to have an effect on the extent of political participation (although the effect for females is not quite significant at the .05 level). This supports the traditional argument that exposure to the media transmits information and instills societal values which lead an individual to take a greater part in the soceity's political system.

The causal effect from such political participation leading to increased media use is highly significant for women ($p < .001$). However, the coefficient for the men is not significantly different from zero ($p = .409$). Although the theoretical development presented above would have predicted a return effect for both men and women, possible explanations for the findings can be suggested.

Because most men interact widely with others in a variety of non-familial social networks, perhaps the information gained from media exposure has a fairly high degree of social utility regardless of political participation. Politically active women, on the other hand, are involved in social networks which are very different from those of non-participant women. While the former will seek out information from the media because it will help them make political choices and because it has social utility, the latter will need only family and neighborhood information for their typical interactions. Since such information is not generally available through the mass media channels, they may turn elsewhere. In other words, political participation may be a much more differentiating variable for women than it is for men.

Another possible explanation might be the meaning of political activism for men and for women. As Haavio-Mannila (1967) reports, political activity is considered an "important" activity for men. Participation in public meetings and political processes is to some extent a part of their sex role expectations. For women, on the other hand, such participation is not an important expectation. Thus men who participate may be "typical," the closest conformers to the societal sex role stereotypes. The women activists may be among the most deviant. Perhaps other life style variables which differentiate these rather unusual women from their feelows are also positively

related to media use. If this is the case, then these politically-active women will use media more frequently than their less active counterparts because of these life syle factors, while the politically-active men will lead a more typical life style which will not lead to more media use.

In general, the theoretical formulation which suggests that the effects of ascribed characteristics would be mediated by social roles and social networks were not supported by the results. Several demographic variables (e.g., AGE for men and RACE for women) have substantial effects on political participation even when controlling for all other model variables. Although Burstein's theory may be at fault, it is probably more likely that measurement of the intervening concepts was too poor to allow them to absorb the relatively powerful effects of these ascribed characteristics. It is interesting to note that mass media use is the most effective intervening variable, especially for the male subsample.

The theoretical prediction of sex interactions does appear to be confirmed. In addition to the differences in the political participation→media use relationship noted above, different variables appear as powerful predictors of media use and political participation within the two subsamples. Specifically, socio-economic status is a fairly strong predictor of both media use and political behavior for the men, but it absolutely no predictive value for the women. Age also appears to be an important variable for the men, while race is more important for the women.

The greater importance of SES for the men is easily explained by the greater extent to which it structures the social roles and interaction for this subpopulation. Men's occupational settings range from the lowest unskilled laborer to the highest professional standing while women, although they may live in "upper" or "lower" class households, always tend to work in white-collar clerical or service jobs. Women who do not work, of course, tend to interact in familial and neighborhood social networks which may be quite similar regardless of social class.

The effect of AGE for the men is confirmation of a common research finding

(Milbrath 1965, Verba and Nie 1974): men participate more in late middle age. The pressures of beginning a career and raising a family restrict time resources in the young adult years, but these activities also build up ties with the surrounding community. In middle and later years, the time pressures are relieved and active political participation becomes more common.

This age effect might weel hold true for women as well if it had not been counteracted in recent years by a substantial upheaval of women's roles within our society. The younger women were socialized in an era which encouraged their full participation in politics and other societal functions, while their mothers were socialized in a period when politics was still considered a man's domain (Haavio-Mannila 1967). The usual effects of age are hidden by the fact that we catch this group of women midway through a major social change. One would expect that men's and women's patterns of political participation over the life cycle would become more similar as the younger cohorts live through their lives to middle and old age.

The differential effect of RACE for men and women is more difficult to explain. Perhaps subcultural differences lead race to influence the social interactions and communication behavior of women more than men. On the other hand, this may be an indication that (especially in a southern state such as North Carolina) political processes may be quite different for blacks and whites. An analysis of these differences would require breaking down the sample into four components: white male, white female, black male and black female. Although sample size will not allow such a breakdown here, researchers working with extremely large samples might be wise to investigate this possibility.

Conclusions

This study had two mjor objectives: first, to test a causal model proposing a bidirectional relationship between political participation and mass media use; and second, to explore the differences in the causal processes which determine participation for men and for women (i.e., the sex interactions with other model variables).

In reference to the first objective, reciprocal causation is found in the female subsample but not in the male subsample. Generally, the results indicate that models which specify media use as a unidirectional cause of participation behavior are probably incorrect. Since empirical observations can lead to accurate inferences about the nature of a system only when the causal model is correctly specified, wider use of techniques which allow the investigation of nonrecursive relationships might greatly increase our potential for accurate theory-building and testing.

The importance of adequate instrumental variables for such analyses indicate that such variables should be theoretically specified and purposely included in surveys in the future. Such variables are difficult to find in secondary data sets and the lack can seriously hamper investigation of nonrecursive systems. For example, it is difficult to conclude whether the lack of a political participation→media use relationship in the male subsample is due to actual differences in the causal process between males and females or whether it is simply an artifact of the weakness of the mobility variable as an instrument for that relationship in the male subsample. Adequate instruments could rule out such alternative explanations.

In reference to the second objective, sex interactions do seem to be present, both in the political participation/media use relationship and in some other relationships. To obtain accurate descriptions of causal process, male and female subsamples should be analyzed separately. This may be true not only of political participation models but also in other research dealing with social behaviors (especially those which have been very sex-specific until recent years).

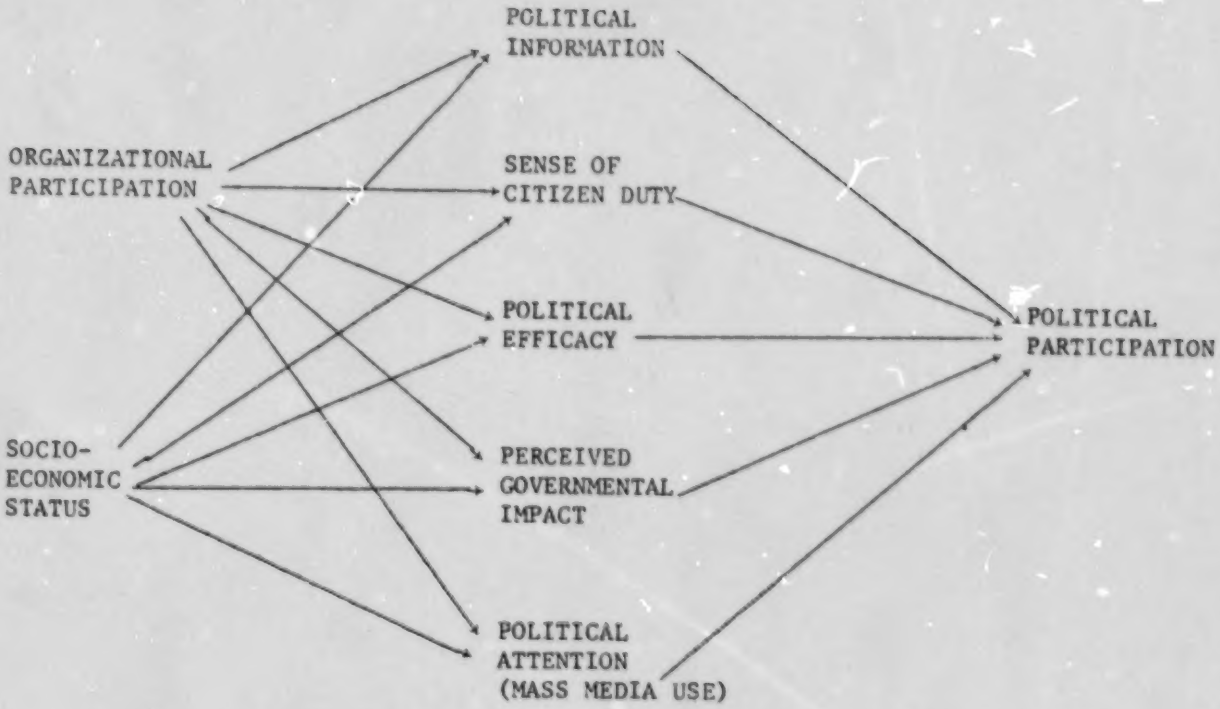

FIGURE 1

Nie et al. Model of Political Participation

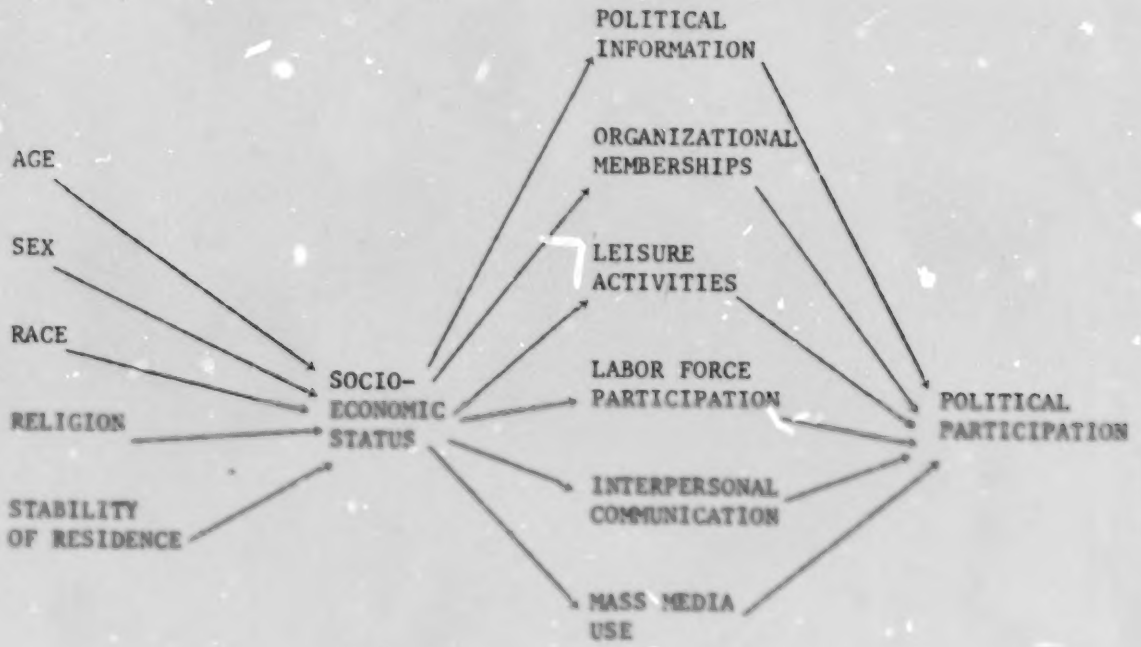

FIGURE 2

Burstein's Model of Political Participation

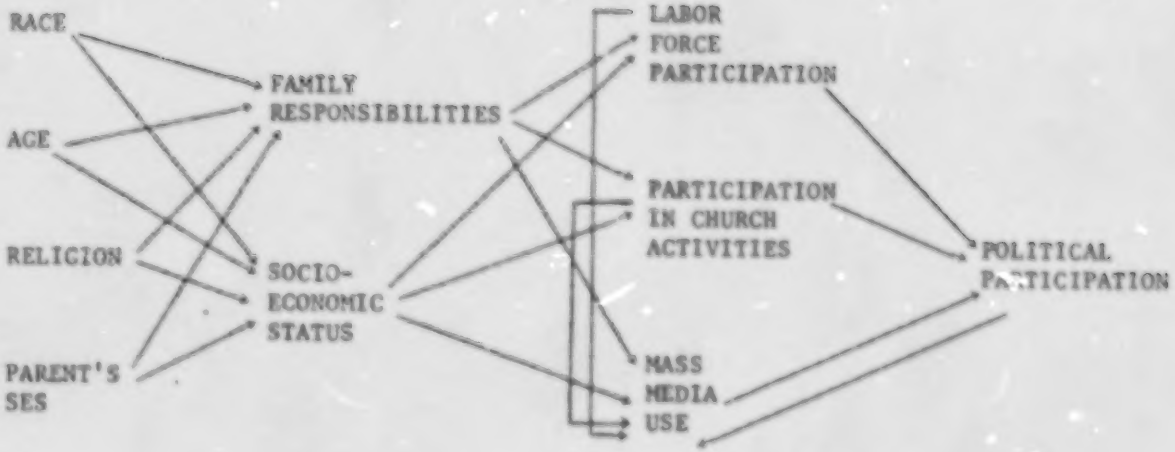

FIGURE 3

Re-Specified Model of Political Participation

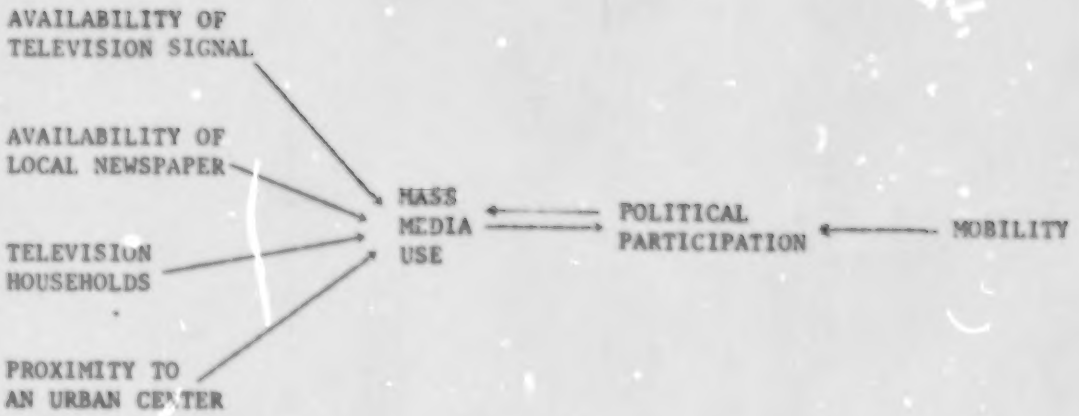

FIGURE 4

Identification of the
Mass Media Use -- Political Participation Loop

TABLE 1

Scale-Building Analyses

For The Political Participation Measure

A. Items Included in the Analyses:

X_1 Voted in Elections

X_2 Talked about Politics

X_3 Written Political Leaders

X_4 Joined in Public Demonstrations

X_5 Worked for Party or Candidate

X_6 Tried to Convince Someone to Vote for Party or Candidate

B. Results of Principal Components Analysis:

Factor	Eigenvalue	Pct. of Variance
1	2.37551	39.6
2	0.98810	16.5
3	0.82726	13.8
4	0.69925	11.7
5	0.62495	10.4
6	0.48490	8.1

C. Results of Principal Factor Analysis with QUARTIMAX Rotation:

Variable	Factor 1	Factor 2	Item Scale Weight $(f_i/1-f_i^2)$
X_1	0.4457	-0.1269	0.55619
X_2	0.7158	-0.1674	1.46779
X_3	0.4870	-0.0253	0.63833
X_4	0.2921	0.2049	0.31936
X_5	0.5892	0.5083	0.79446
X_6	0.5925	0.2019	0.61769

TABLE 2

Scale-Building Analyses
For The Mass Media Use Measure

A. Items Included in the Analysis:

X_1 How Often Used Library for Information in Past Year
X_2 Watch TV News Yesterday or Today
X_3 Read Newspaper Yesterday or Today
X_4 Read Editorials in the Newspaper

B. Results of Principal Components Analysis:

Factor	Eigenvalue	Pct. of Variance
1	1.69221	42.3
2	0.84444	21.1
3	0.80961	20.2
4	0.65374	16.3

C. Results of Principal Factor Analysis:

Variable	Factor 1	Factor 2	Item Scale Weight $(f_i/1-f_i^2)$
X_1	0.3992	0.1908	0.47493
X_2	0.3815	0.0183	0.44642
X_3	0.5403	-0.0482	0.76303
X_4	0.6211	-0.1523	1.01129

TABLE 3

Scale-Building Analyses
For The Mobility Measure

A. Items Included in the Analysis:

X_1 Think of Present Residence as Hometown?
X_2 Longest Distance Ever Traveled
X_3 Choice of Anywhere to Live -- Here or Somewhere Else
X_4 Number of Moves
X_5 Ever Attended School Outside Region
X_6 Length of Time at Present Residence

B. Results of Principal Components Analysis:

Factor	Eigenvalue	Pct. of Variance
1	1.88560	31.4
2	1.18002	19.7
3	1.00296	16.7
4	0.70689	11.8
5	0.69700	11.6
6	0.52751	8.8

C. Results of Principal Factor Analysis:

Variance	Factor 1	Factor 2	Item Scale Weight $(f_i/1-f_i^2)$
X_1	0.5686	0.0316	0.840381
X_2	0.3228	0.1137	0.360310
X_3	0.4067	-0.0176	0.487272
X_4	0.2924	0.7921	0.319681
X_5	0.5066	0.0879	0.681413
X_6	0.0895	0.4808	0.090221

TABLE 4

Results of Two-Stage Least Squares Estimation
of Coefficients in the Causal Model
for the Male Subsample (N = 489)

A. Dependent Variable: Political Participation (R^2 = 0.1385)

Predictor	Standardized Beta	Unstandardized b Coefficient	Standard Error of b	T-ratio* (b/σb)
MEDIAUSE	0.229	0.683	0.318	2.145
EMPLOY	0.053	0.161	0.150	1.075
ATTEND	0.021	0.105	0.217	0.483
SES	0.157	0.362	0.224	1.615
FAMILY	-0.033	-0.080	0.111	-0.724
RACE	-0.024	-0.148	0.279	-0.529
AGE	0.100	0.153	0.079	1.932
RELIGION	-0.014	-0.109	0.328	-0.332
PARSES	0.015	0.031	0.094	0.331
MOBILITY	-0.078	-0.091	0.058	-1.588

B. Dependent Variable: Mass Media Use (R^2 = 0.3261)

Predictor	Standardized Beta	Unstandardized b Coefficient	Standard Error of b	T-ratio* (b/σb)
POLIPART	-0.494	-0.778	0.941	-0.826
EMPLOY	0.040	0.071	0.205	0.348
ATTEND	0.047	0.140	0.268	0.523
SES	0.854	1.153	0.693	1.664
FAMILY	0.005	0.007	0.125	0.053
RACE	-0.085	-0.310	0.352	-0.880
AGE	0.018	0.016	0.137	0.116
RELIGION	0.007	0.032	0.354	0.089
PARSES	0.058	0.069	0.110	0.626
TVHH	0.275	0.150	0.102	1.477
TVSIGN	-0.007	-0.006	0.095	-0.066
NWSPR	-0.100	-0.077	0.114	-0.676
URBAN	0.231	0.382	0.236	1.622

* T-ratios for testing whether coefficients are different from 0.00; a T-ratio $\geq$ 1.96 is significant at the .05 level in a two-tailed test.

TABLE 4 (con't.)

C. Dependent Variable: Labor Force Participation (R^2 = 0.2962)

Predictor	Standardized Beta	Unstandardized b Coefficient	Standard Error of b	T-ratio (b/σb)
SES	0.157	0.120	0.033	3.584
FAMILY	0.146	0.118	0.033	3.595
RACE	0.014	0.028	0.082	0.344
AGE	-0.434	-0.220	0.021	-10.560
RELIGION	-0.067	-0.170	0.099	-1.726
PARSES	0.015	0.010	0.029	0.366

D. Dependent Variable: Participation in Church Activities (R^2=0.0479)

Predictor	Standardized Beta	Unstandardized b Coefficient	Standard Error of b	T-ratio (b/σb)
SES	0.092	0.042	0.023	1.804
FAMILY	0.146	0.070	0.023	3.092
RACE	0.103	0.126	0.057	2.206
AGE	0.192	0.058	0.014	4.010
RELIGION	-0.003	-0.004	0.068	-0.060
PARSES	-0.032	-0.013	0.020	-0.655

E. Dependent Variable: Socio-Economic Status (R^2 = 0.2420)

Predictor	Standardized Beta	Unstandardized b Coefficient	Standard Error of b	T-ratio (b/σb)
RACE	-0.218	-0.586	0.109	-5.396
AGE	-0.135	-0.090	0.028	-3.202
RELIGION	0.050	0.167	0.134	1.243
PARSES	0.381	0.338	0.036	9.468

F. Dependent Variable: Marital Status and Familial Responsibilities (R^2 = 0.1168)

Predictor	Standardized Beta	Unstandardized b Coefficient	Standard Error of b	T-ratio (b/σb)
RACE	-0.069	-0.174	0.110	-1.584
AGE	-0.335	-0.210	0.027	-7.810
RELIGION	-0.068	-0.213	0.136	-1.569
PARSES	0.017	0.014	0.036	0.383

TABLE 5

Results of Two-Stage Least Squares Estimation
of Coefficients in the Causal Model
for the Female Subsample (N = 593)

A. Dependent Variable: Political Participation (R^2 = 0.1602)

Predictor	Standardized Beta	Unstandardized b Coefficient	Standard Error of b	T-ratio* (b/σb)
MEDIAUSE	0.389	1.153	0.728	1.584
EMPLOY	0.034	0.076	0.146	0.521
ATTEND	-0.015	-0.069	0.211	-0.328
SES	0.009	0.020	0.343	0.059
FAMILY	-0.038	-0.073	0.098	-0.750
RACE	0.102	0.550	0.321	1.714
AGE	0.021	0.030	0.078	0.390
RELIGION	0.023	0.239	0.428	0.558
PARSES	0.040	0.080	0.118	0.684
MOBILITY	0.001	0.002	0.153	0.011

B. Dependent Variable: Mass Media Use (R^2 = 0.2711)

Predictor	Standardized Beta	Unstandardized b Coefficient	Standard Error of b	T-ratio (b/σb)
POLIPART	0.533	0.863	0.253	3.417
EMPLOY	-0.057	-0.084	0.105	-0.800
ATTEND	0.015	0.044	0.161	0.276
SES	-0.010	-0.014	0.180	-0.080
FAMILY	0.042	0.053	0.081	0.653
RACE	-0.125	-0.438	0.199	-2.203
AGE	-0.023	-0.021	0.063	-0.336
RELIGION	-0.028	-0.187	0.365	-0.513
PARSES	-0.052	-0.067	0.095	-0.707
TVHR	0.013	0.007	0.045	0.154
TVSIGN	0.076	0.073	0.076	0.959
NWSPR	0.023	0.019	0.061	0.305
URBAN	-0.080	-0.141	0.127	-1.112

*T-ratios for testing whether coefficients are different from 0.00; a T-ratio > 1.96 is significant at the .05 level in a two-tailed test.

TABLE 5 (con't.)

C. Dependent Variable: Labor Force Participation (R^2 = 0.1563)

Predictor	Standardized Beta	Unstandardized b Coefficient	Standard Error of b	T-ratio (b/σb)
SES	-0.117	-0.113	0.044	-2.602
FAMILY	-0.269	-0.233	0.039	-6.031
RACE	-0.006	-0.014	0.096	-0.142
AGE	-0.440	-0.278	0.028	-9.858
RELIGION	-0.021	-0.099	0.179	-0.552
PARSES	-0.005	-0.004	0.038	-0.106

D. Dependent Variable: Participation in Church Activities (R^2=0.0362)

Predictor	Standardized Beta	Unstandardized b Coefficient	Standard Error of b	T-ratio (b/σb)
SES	0.081	0.039	0.023	1.695
FAMILY	0.047	0.020	0.020	0.983
RACE	0.110	0.129	0.050	2.581
AGE	0.162	0.050	0.015	3.398
RELIGION	0.011	0.024	0.093	0.258
PARSES	0.050	0.022	0.020	1.080

E. Dependent Variable: Socio-Economic Status (R^2 = 0.2867)

Predictor	Standardized Beta	Unstandardized b Coefficient	Standard Error of b	T-ratio (b/σb)
RACE	-0.215	-0.532	0.088	-6.034
AGE	-0.080	-0.052	0.027	-1.954
RELIGION	0.113	0.538	0.168	3.207
PARSES	0.415	0.379	0.033	11.623

F. Dependent Variable: Marital Status and Familial Responsibilities (R^2 = 0.2707)

Predictor	Standardized Beta	Unstandardized b Coefficient	Standard Error of b	T-ratio (b/σb)
RACE	-0.012	-0.034	0.100	-0.338
AGE	-0.519	-0.378	0.026	-14.683
RELIGION	0.021	0.113	0.190	0.595
PARSES	-0.194	-0.020	0.595	-0.539

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FOOTNOTES

1
In his proposition inventory of research findings on political participation, Milbrath (1965) cites more than 250 empirical studies.

2
First, all of the variables in the proposed causal system must be specified as either exogenous (independent) or endogenous (dependent). This distinction requires theoretical knowledge of causal linkages between variables which no correlational analysis can provide. Secondly, the relationships between variables in the system are assumed to be linear and additive. That is, a variable must be described such that the influences due to different causes cumulate additively and such that values of a source vary proportionately to the values of the effected variable. Finally, the researcher must assume that the disturbances (unspecified sources) of the model's variables are not correlated. In effect, this assumption means that all of the important determinants of the dependent variables must be included in the model.

3
This data set was collected by Almond and Verba (1965). It includes a national sample of adults in the U.S., Great Britian, West Germany, Italy and Mexico.

4
Quartimax rotation is chosen over the more popular Varimax because it emphasizes simplification of the rows of the factor matrix (while Varimax works to simplify the columns of the factor matrix). With a Quartimax rotation, the first rotated factor tends to be a general factor with many variables loading highly. This type of solution seems appropriate for scaling, since one underlying factor is hypothesized.

5
The Hodge-Siegal-Rossi prestige scores were developed by Robert W. Hodge, Paul S. Siegal and Peter H. Rossi in a study at the National Opinion Research Center, University of Chicago, in 1963-65. This concept of prestige is defined as the respondents' estimation of the social standing of occupations. The prestige scores were originally designed for use with the 1960 U.S. Census occupational codes, but have been adapted to the 1970 listing (National Data Program Codebook 1974).

6
Of the 80 respondents who were coded as minority religious affiliates, one was Jewish, 37 were Roman Catholic, 32 were independents, 3 were Jehovah Witnesses, and 7 were members of other minority sects.

7
Of the 214 non-whites in the sample, 199 were Negroes, 11 were American Indians, and 4 were some other non-white race.

8
Grade A signal service is defined by the Federal Communications Commission as "Satisfactory service expected at least 90 percent of the time for at least 70 percent of the receiving locations." Each television station grantee is required to submit to the FCC its coverage contours predicted on the basis of engineering formulas designated by the Commission (Television Factbook 1970-1971). CATV is not a major factor in the state of North Carolina.

APPENDIX A

VALIDITY, INVALIDITY AND RELIABILITY*

Rho is a validity index specifying the correlation between the underlying factor T and its corresponding score S. The formula for calculating rho is given by:

$$\rho_{TS} = \frac{\sum \sigma_i f_{ik}}{\sqrt{\sum \sum \text{Cov}(x_i, x_j)}}$$

where

x is the observation on item i
σ_i is the standard deviation of i
f_{ik} is the factor loading of the i^{th} item on the k^{th} factor

Psi-squared is a measure of invalidity. It indicates the proportion of the variance in the score S that is associated with latent variables other than the one of interest. Thus psi-squared measures the extent of correlation between a score S and some trait Q that S is *not* supposed to measure. The formula for calculating psi-squared is:

$$\psi^2 = 1 - \rho_{TS}^2 + \frac{\sum \sigma_i^2 h_i^2 - \sum \sigma_i^2}{\sum \sum \text{Cov}(x_i, x_j)}$$

where

h_i^2 is the communality of item i

Omega is a measure of reliability, or the correlation between two equivalent forms of a test. The correlation between the two equivalent scores depends on their mutual dependence on certain underlying traits.

---

* NOTE: This discussion is paraphrased from Heise and Bohrnstedt (1970).

Thus the reliability of a composite score is the sum of both the valid and the invalid variance (i.e., the variance due to *all* common factors). The formula is simply:

$$\Omega = \Psi_S^2 + \rho_{ST}^2$$

OR

$$= 1 - \frac{\sum \sigma_i^2 - \sum \sigma_i^2 h_i^2}{\sum \sum \mathrm{Cov}(x_i, x_j)}$$

APPENDIX B

TWO-STAGE LEAST SQUARES ANALYSIS*

A general method of estimating parameters in non-recursive relationships from cross-sectional data was developed in the 1950s by econometrician Henry Theil (c.f. 1953, 1971). This method--Two-Stage Least Squares analysis--is applicable when the disturbances (unspecified sources) of system variables are correlated and or when two system variables are involved in a causal loop.

The method involves using instrumental variables in a first round of multiple regression analyses to define new system variables that are free of confounding effects from disturbances or mutual causation. These new variables are then employed in a final round of regression analyses to estimate structural coefficients and the variances and covariances of the disturbances. Heise (1975) details the steps involved:

> If some of the relations between a system variable and its sources are non-recursive but adequate instruments exist for them, the structural coefficients for operators determining the variable may be estimated:
>
> (a) Write out a structural equation that expresses the value of the dependent variable as a function of its immediate sources, the structural coefficients and the disturbance term.
>
> (b) Make up a list of predetermined variables consisting of all recursive sources in the equation and all instruments for non-recursive sources.
>
> (c) Regress each of the non-recursive sources on all the predetermined variables to obtain a set of regression equations for

---

* NOTE: This discussion is paraphased from Heise (1975). The logic of Two-Stage Least Squares is explained more thourghly in Heise (1975, Chap. 5).

"predicting" values on each non-recursive source from values on the predetermined variables.

(d) Return to the original set of observations and for each case calculate the predicted value for each non-recursive source, using the formulas obtained in Step (c). This procedure generates one new variable, called a "decontaminated source," for each of the original non-recursive source variables.

(e) Return to the equation defined in Step (a) and estimate its coefficients by ordinary least squares, substiuting the decontaminated source variables for the original non-recursive sources (Heise 1975:169).

The values of the "new" source variables represent an extraction of real variations in the non-recursive source which are in no way contaminated by, or correlated with, the disturbances (unspecified sources) of the dependent variable. Hence the relationship between the dependent variable and this "purified" source is recursive and its structural coefficient can be estimated using ordinary least squares.

Although the calculating procedure outlined above is useful for understanding the logic of Two-Stage Least Squares, mathematical formulas that define this procedure as a single-step analytic procedure are available. The matrix equations are too complex for manual calculations, but many computer installations have such mathematical solutions as part of their statistical program packages (for example, SAS and SOUPAC both contain such programs). Program documentation should be consulted for the matrix form of Two-Stage Least Squares analysis.